RUMORE Action Plan PP4: Amsterdam

December 2019

Contents:

1. General information

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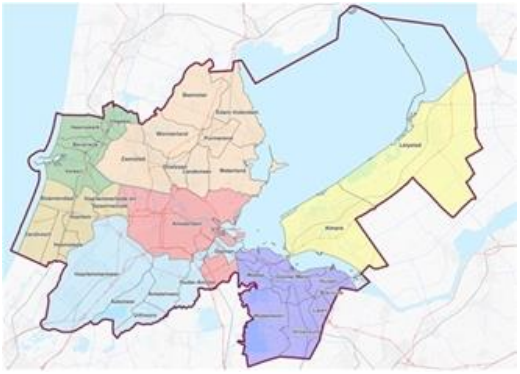
1.1 Territorial Context: Amsterdam and the MRA

Amsterdam is the capital city and most populous municipality of the Netherlands. The city has a population of ca. 854,000 million people within the city proper, and 2,4 million in the Metropolitan Region (MRA). There are 1.1 million homes, 1.5 million jobs and 230,000 businesses established here. Tourists account for 14.1 million overnight stays in hotels per annum.



The MRA is the most robust economic region in the Netherlands and is a strong international competitor. Amsterdam is growing fast and experiences a high housing demand and growth in the establishment of businesses.

T*he Amsterdam Metropolitan Region (MRA), © metropoolregioamsterdam.nl*

1.2 Urban-rural exchange

When it comes to the Interreg focus of urban-rural exchange, there is in fact potential for improvement in the MRA, since there is a relatively limited exchange between the city of Amsterdam and the surrounding area. This is however not due to lack of accessibility to innovation, education or infrastructure in the region (compared to the city), but is more a result of different orientations. Amsterdam as a city is gentrifying (its growing population becoming richer, more demanding, highly educated), having a generally more inward (and at the same time international) focus, where the surrounding area is dominated by large-scale businesses and farmers having a global reach, with a focus on export. To these businesses the city can be important because it provides skilled labour, an international airport and

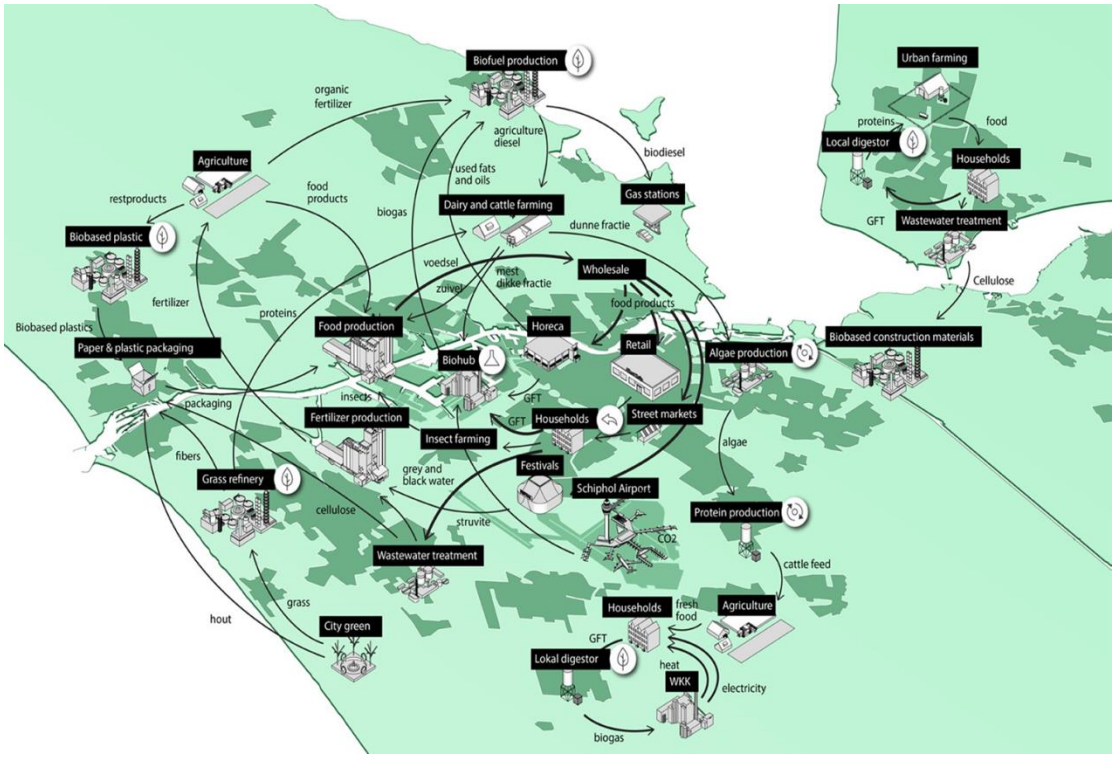
harbour, and state of the art ICT services, but as a market for their products, Amsterdam is hardly significant. The regional agriculture exists mostly of large scale export oriented dairy farms. The city area on the other hand provides space for innovative start-ups and research and education institutions, but few of them have a strong connection to the surrounding area. Stimulating collaboration between city and Region on innovative projects, connecting start ups and scale ups to the area around the city in an active way could be beneficial for many reasons. It could stimulate a more sustainable, circular economy, which is a priority of the European Commission and also one of the main priorities of the City of Amsterdam and the MRA. Especially on the topic of food production and consumption, and on the valorisation of organic streams (biomass), there is a lot to gain[1]. As will be explained further on, focussing on a more circular Agri-Food chain, could stimulate the circular economy, prevent rural areas from loosing people, work and landscape and could contribute to better territorial cohesion in the region.

1.3 Towards a circular Agri-Food chain in the MRA

In response to the global challenges of the 21st Century, the circular economy has emerged as a viable alternative to the unsustainable linear (take-make-waste) status quo. A circular economy is regenerative by design, and it allows that the societal needs of all can be provided within the natural boundaries of the Earth. The transition to a circular economy is a global movement, seen across countries and scales. The city of Amsterdam is a pioneer in the transition towards a circular economy and wants to – being in the next phase of its circular transition - focus on scaling up existing initiatives and setting the right condition for the circular economy to flourish.

In the RUMORE Amsterdam project, to best address local objectives and current challenges of climate change, the focus is to improve and innovate the regional circular Agri-Food chain. This is regarded necessary because extreme efficiency and increasing economics of scale have brought the MRA welfare, but also negative side effects such as a `high ecological footprint (high CO2 emissions), and loss of biodiversity and landscape.
Combining this with the fact that the ERDF Operational Programme for the Western Netherlands explicitly names the difficulty that small companies have in growing and scaling up. RUMORE Amsterdam seeks to help circular Agri-Food start-ups and scale-ups to grow by facilitating them to realize their plans (Actions) and to increase their local market share. This is relevant for establishing short supply chains that can catalyse a circular economy through SME employment, as well as strengthen innovations that protect the landscape. Also, to use residual flows in an optimal way would create a regional Agri-Food 'cycle' that is economically attractive and at the same time respects the local natural environment.

[1] Circular Amsterdam, a vision and action agenda for the city and the metropolitan area (2015) , included a quick scan pointing out the two most promising chains for a circular economy: one of them being the food and biomass chain (the other one the construction chain).
https://www.amsterdam.nl/bestuur-organisatie/organisatie/ruimte-economie/ruimte-duurzaamheid/circular-economy/report-circular/



Visualization of the circular Agri-Food chain in the Metropolitan Region Amsterdam
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2. Policy Context

The Action Plan aims to impact:	1) Investment for Growth and Jobs program 2) Other regional development policy instrument
Name of the policy instrument	1) "Kansen voor West" operational program of Western Netherlands 2014-2020 2) City of Amsterdam: - Strategy Amsterdam Circular 2020-2025, - Circular Economy Program: Innovation and Action plan 2020-2021

As it was defined in the project's Application form, the challenge the Western Netherlands wants to meet with the policy instrument lies in strengthening of research and technological development and innovation. Encouraging knowledge valorisation and leveraging possible cross-over opportunities. Improvement was found necessary (when writing the Application) because urban-rural connections between education, start-ups and regional investment strategies in economic clusters were not yet well-established and needed to be improved to generate a higher economic output and job growth. This is written in the past tense, because a lot has changed over the last years. The Amsterdam Metropolitan Area (MRA) has

invested and improved enormously when it comes to innovation. This even resulted in Amsterdam winning the European Innovation Award in 2016. The MRA has clear innovative qualities in many area's, but where it probably distinguishes itself most from other regions in the EU, is when it comes to bottom-up innovation: small parties, intermediary organizations and residents initiating platforms and coming up with, and applying, self- invented solutions.

2.1 The Operational Programme and its priorities

Kansen voor West is financed by the EU ERDF fund, the total budget of the Operational Program for the western Netherlands is € 190,6 million. The program does not work with calls, but is open to project proposals during the entire period (2014-2020). The ERDF-program 'Kansen voor West' covers the provinces of Noord-Holland, Zuid-Holland, Utrecht and Flevoland. The four major cities in the Netherlands (Amsterdam, Rotterdam, The Hague and Utrecht) are partner in this program as well. These eight parties together share the responsibility for the implementation of the Operational Program ERDF. Which means that all eight should agree on changes in the OP. This, combined with the fact that the program does not work with calls, makes 'Kansen voor West' hard to influence. The City of Amsterdam works closely with the responsible regional authority, the Province of Noord-Holland.

The Operational Programme selects four priorities: 'Innovation among SMEs', 'Reduction of CO_2 emissions', 'Promoting employment, supporting labour mobility and labour potential' and 'Social inclusion/poverty reduction'.

The OP identifies the Agri-Food sector as one of the Top sectors (areas of smart specialisation). Within this specific sector, the biggest challenge in the region is to develop the Agri-Food sector in a sustainable, circular way.

2.2 Goals for Rumore Amsterdam

The main goal for Rumore Amsterdam is to facilitate and accelerate the desired transition to a circular Agri-Food chain in the MRA. The Rumore project activities directly contribute to boosting innovation, to strengthen urban-rural linkages and the local economy, and to growth of jobs – but in a specific field: the field of circular Agri-Food. This will require new technical solutions, new ways of social organizational structures, new business modelling and above all trust in bottom-up development: the individual responsibility and professionalism of young entrepreneurs.

Forming a local stakeholder group was the first step when the Rumore project started: a group of SME's, public authorities and knowledge institutes from the city and region, all working in the field of circular Agri-Food. Pioneers, all incredibly motivated and full of energy, exchanging knowledge and 'best practices', finding each other to collaborate, in some cases formulating projects together. The stakeholders needed each other to create short supply chains, to valorise residual flows, to find markets and for the exchange of knowledge, materials and goods. This group in fact generated all Actions (chapter 3) that

are currently being developed under the RUMORE flag. These Actions should result in an increased number of new marketable products and services, and create more circular SME's and 'circular jobs' in Amsterdam and the region (MRA) (self-defined performance indicator).

The Actions in chapter 3 all create a connection between demand (end user) and supply (enterprises and knowledge institutes) making use of test beds, living labs and demonstration sites. What is needed in the end, are good, scalable examples of circular business cases. This requires research, knowledge exchange, funding, and also launching customers (like the (local) government).

Small companies often have difficulties in growing and scaling up, many disappear in the so called 'valley of death'. RUMORE Amsterdam performed an inquiry among its local stakeholders (circular Agri-Food start-ups and scale-ups) to identify the currently existing 'obstacles' that obstructed them to grow. A summary of the results:

- The market's focus on the lowest price at the moment of investment is a barrier for smaller sized, sustainable SME's. Often circular products are actually less expensive when you take the whole life cycle of the product into account (or when a price or tax would be put on the environmental damage of regular products) but this rarely happens.

- There is a lack of knowledge on organic residual flows: the types of flows, where to find them, the available amounts, how to create critical mass when there are many small quantities that need to be gathered and distributed.

- The Agri-sector needs to develop new and sustainable crop culture programs that will combine production efficiency on the one hand with bio-diversity (flora and fauna) on the other hand. This can only be managed by regional cooperation and innovations to reduce the use of pesticides, improve soil quality and enhance multi-cropping instead of mono-cultures.

- The circular economy mantra "waste is a resource" is not yet recognised in legislation and regulations. For example, when a residual flow is marked as 'waste' there are often rules that restrict re-use.

- Sustainability funding, loans and subsidies generally only focus on CO_2 reduction (mostly on green energy), and rarely focus on circularity and re-using residual flows.

These findings and other experiences form the local stakeholder group were shared and used as input for the 'Strategy Amsterdam Circular 2020-25', a policy instrument by the City of Amsterdam, where food and biomass is one of the three value chains (the other two being construction and consumer goods).

Another result of these findings, was the RUMORE Amsterdam stakeholder group launching the idea of starting a 'Circular Agri-Food platform' for long-term cooperation in order to accelerate the desired system change (Chapter 3, Action 1, "Flywheel"). With the aim of working together on tackling the before mentioned obstacles and creating scalable examples of how a circular system can work. There is a lot of positive energy on the subject, reflected in the RUMORE local stakeholder gatherings over the last three years and in the

bottom-up innovative ideas and projects they have come up with.
In chapter 3 the Actions can be found, which include an initiative called Quisquiliae for valorising 'residual organic streams'; a pilot wetland crop field resulting in isolation board for building houses; a platform on food waste (making surplus food available for chefs); and lastly the initiative to start a food cooperative in the region, creating a short supply chain for markets in the city.

2.3 Inter-regional learning

Although the Actions were the result of exchange on a local scale, between local stakeholders, mentioning the EU learning from partners is important. Interregional learning was part of every stakeholder meeting and was in fact eye-opening in many ways. During local meetings presentations were given about projects of the other EU partners, and several local stakeholders joined the partner meetings abroad. Regions like Lombardy, Burgas and Central Macedonia showed enormous pride in local quality food products, something the MRA can only wish for. People value products from nearby, they value taste, and the products are sold in the city more often (short supply chains). There is a culture around valuing food that in the MRA is often lacking. Movements like Kilometro zero (Lombardy, linked to Slow food) and Macedonian cuisine were very inspiring. These regions are also much more experienced in forming cooperatives, in creating mass by standing strong together, and in creating short supply chains. A general felt sentiment was 'we have really lost something in this extreme efficiency and in the process of large-scale export production' and it emphasized the need to work on a system change. At the same time there is the realization that the welfare level in the MRA is high, which is also due to this extreme efficiency of scale. The largest challenge we may face, is probably to create a sustainable, circular economy that is economically strong and were there is welfare for all.

2.3 Improving the Policy Instrument

From the very beginning of Rumore Amsterdam, there has been close contact between the project leader and the managing authority of the operational programme. There were regular meetings with a project group that consisted of the local authority of Kansen voor West, the EU programme manager and the Circular Economy programme manager. Also, the Local authority was present at all stakeholder meetings, and presented the possibilities of (funding by) the Operational Programme there. This resulted in several 'preliminary applications' for new project ideas, that were all separately discussed with the parties (stakeholders) involved, the project leader and the local authority. The new project ideas that were viable and are still in progress are now listed as Actions in Chapter 4.

Following from the discussions with the managing authority and the experiences from the Local stakeholder group, to generate *new project ideas* was in fact regarded as the only possibility to influence the Kansen voor West Operational Program.
As a direct result of the stakeholder group meetings, the inter-regional learning and the project work, the Actions in the next chapter emerged. The Actions are related to regional innovation on circularity through the strengthening of urban-rural linkages and forming

networks of SME's , knowledge institutes and local governments, cooperating and improving innovation and urban-rural labour market connections. These Actions are all submitted as preliminary applications to 'Kansen voor West' in 2019. Generating ideas and turning them into concrete projects takes (a lot of) time, so this process is still in progress. Hopefully at least some of the Actions will get funding by the OP. If not, other ways of funding will be sought.

3. Details of the actions envisaged

ACTION 1

Name	**Flywheel Circular Agri-Food**
Planned activities	Establishing an entity (in the form of a programme office), combined with setting up a cluster of circular Agri-Food entrepreneurs and projects (partly a continuation of the Rumore stakeholder group). This 'Flywheel Circular Agri-Food' (working title) will have an overall goal of facilitating circular Agri-Food entrepreneurs in overcoming the obstacles that the current linear economy still poses them. In this way the Flywheel wants to stimulate innovative SME's and to create investment for growth and jobs in the field of circular economy in the MRA. The Flywheel will cooperate closely with 'Voedsel Verbindt', a regional (MRA) network. This new cluster is expected to establish a wider spin-off of innovative promising initiatives and ideas from SME's and research institutes in the utilization of organic waste in the agro-food sector and in sustainable innovations and establishing short supply chains in the region (more urban-rural exchange). This should lead to a significant bottom-up contribution to CO_2 reduction and the transition to a circular economy. Since funding for platforms and facilitation projects is not possible under the current OP, the Flywheel will be funded by the City of Amsterdam (combined funding by three departments) for 2020. Possibly, in 2021 an application for the next OP, that has a focus on circular economy, will be done. The Flywheel will start with the following activities: - Setting up an entity ('Flywheel') where knowledge, skills, resources, (funding) instruments, people and (administrative)

	networks and contacts are bundled. - Creating a cluster of entrepreneurs in the regional field of circular Agri-Food can join on the base of having joint objectives. The Flywheel aims to combine instruments and networks, to facilitate learning, experimenting, cooperation and development of (communication) strategy. - Organizing network events, thematic knowledge exchange events, meetings between SME's and investors, ways for like minded SME's to find each other, share experience, cooperate. - Finding a location, or a zone, in the MRA where start-ups and scale ups can establish themselves and experiment. The aim is to find one or more zones with reduced regulation[2], to make it possible to try out new products, inventions or valorisations for organic material (which is very restricted). - Possibly: Offering a subsidy or some other concrete, accessible help for start ups in the form of a 'circular innovation voucher', which can exist of a small sum of money combined with advice ('expert hours') on whatever they need to proceed - finding locations, markets, external bureau's etc. - Support the realization of concrete projects. For example, the Flywheel contributes momentarily to the preliminary application of the very innovative vertical farm GrowX (also a Rumore stakeholder) for EFRO funding. - Connecting the cluster to innovations and contacts to other regions, in order to facilitate scalability and (inter)national knowledge exchange As a result of this, promising ideas and initiatives will be brought to realization in the field of circular Agri-Food: new products, valorisation of residues in the agro-food sector, short supply chains, new cooperation's. This will be the result of an effective and efficient manner of using all instruments, knowledge, funding and help that can be found in the region on this topic.
Challenge addressed	Improving urban-rural exchange in the agro-food sector in the MRA, strengthening cluster cooperation between urban and rural areas, establishing short chains, protecting landscape and biodiversity. All serving the overall goal of reducing the climate impact of food, and feeding the cities of tomorrow in a sustainable way.

[2] The City of Amsterdam is in the process of pointing out several 'zones of reduced regulation', to make innovation and experimenting possible in those areas that suffer from restrictive regulations.

	Valorisation of innovative strategies by circular entrepreneurs is often hampered by lack of access to local markets and networks in the MRA. The focus of the 'linear' market on the lowest price, not taking into account the whole Life Cycle of products, makes it hard to compete. The market for circular products and SME's is growing, but this could definitely be stimulated and accelerated. Meetings and an inquiry in the Rumore stakeholder group have made it clear that in the MRA promising ideas and initiatives in the field of valorisation of residual flows in the Agri-Food sector are not sufficiently exploited due to lack of (financial) strength, little and too complex funding possibilities, lack of capacity (application procedures are very time consuming), and lack of financial resources to complement the co-funding, required additional knowledge and expertise, obstructing laws and regulations or not being able to find the right partners. Different instruments exist and are offered by several authorities (such as subsidy opportunities, network meetings and master classes), but the whole is fragmented, and none focus specifically on Agri-Food. Often SME entrepreneurs drop out prematurely because they 'get lost in the system' or because the creation of preconditions to be able to bring the idea or initiative into realization requires too much time. If a stronger structure, that focusses specifically on circular Agri-Food, is established, where knowledge, expertise, (financial) resources, network, enthusiasm, political-administrative support and communication are combined, in a way that they reinforce each other and are easily accessible for initiators who can use help with the further introduction of their initiative, much more impact can be realized.
Interregional inspiration	The Flywheel is inspired by several partner-projects creating entrepreneurial platforms, clusters or hubs that create connections between production chain players, to better market regional products. Great examples are Smart Farming solutions and the American Farm School in Central-Macedonia, the Innovation incubator and start-up centres of Luneburg, Open-Agri in Lombardy or the Agrodesign cluster in Thessaloniki. Also, several partners (like Milan and Central-Macedonia) have shown how a certain pride in regional food is an essential part of the better marketing of local food products.
Players involved	***Core team:*** - CTO (Chief Technology Office, managing the Innovation program of the City of Amsterdam) - Economic Affairs . - Amsterdam Trade & Innovate, City of Amsterdam - Circular Economy program, City of Amsterdam

	Partners (not all confirmed yet): - Voedsel Verbindt ('Food connects'= regional food initiative) - Province of Noord-Holland - Ministry of Agriculture - MRA Bureau (Amsterdam Metropole area office) - Amsterdam Economic Board - University of Amsterdam/Green Campus - AMS institute - SME's / Rumore stakeholdergroup
Timeframe	Start project in 2020 (own funding municipality) Prepare application for the OP in 2020/21 Apply for the OP (next period) in 2021
Costs	To be determined, estimated at €800.000,-
Funding source(s)	- Circular Economy Program City of Amsterdam - Operational Program 'Kansen voor West' - Ministry of Agriculture - AMS institute - Other partners are interested and will join
Urban-rural aspects	This Flywheel is a vehicle to create Agri-Food circularity in the region, it needs urban-rural exchange. Only if enough parties will join it can work and be fruitful. A certain critical mass is needed, not only in partners but also in food products and organic streams to become profitable. The cluster will help connect city start ups and scale ups to more rural partners in the region, and can also give them access to new markets for their products.
Innovative character	The Circular Economy as an alternative to the 'linear' economy, is in fact still very innovative. Putting circularity in practice (and profit), creating business models that work, is still new, and pioneering. The current linear economy is very dominant and hard to compete with. The new Circular Economy Strategy 2020-2025 of the municipality uses the Doughnut Theory by Kate Raworth as a base, stating that economic growth needs to respect planetary and social boundaries. If this would become the base of our decisions and how we organise the economy, this would be very innovative. Secondly, most circular entrepreneurs and SME's are in fact very innovative, creating new products from organic materials , new services. Nevertheless they have problems in scaling up and finding markets, there is limited impact and implementation power. There is no entity yet in the MRA to ensure connection and cohesion in circular Agri-Food. The Flywheel would bundle knowledge, expertise and (financial) resources, inducing support

	and easily accessible for entrepreneurs and initiators from knowledge institutions.
Monitoring	The results from the action will be monitored in several ways - following/counting the number of entrepreneurs involved, - number of events organized, - number of funds granted, - number of partnership activated, - number of projects implemented. An evaluation will be written on how the Flywheel has succeeded in accelerating the Circular Agri-Food chain, that can serve as valuable input to the circular economy and innovation programs of the City of Amsterdam.

ACTION 2

Name	**Quisquiliae** The Quisquiliae (Latin for 'waste') initiative consists of several sub-projects: a Establishing an overall Organic material Plant b. Valorization of organic streams (vegetables and fruits) – funded by POP-3 (granted). c Green Junior (student project): Enrich the water soluble fraction of cocoa shell. d Proof of Concept: Processing of cocoa shells.
Planned activities	The main action and aim of the project is to develop Proof of Concept for the processing of residual flows of vegetables and cocoa beans (scale of kilos per hour). Quisquiliae wants to build a pilot-plant, where process-technological insights for the residual flows can be tested, that leads to products which in turn can flow back into the food preparation process. These steps (activities) will be taken: 1 Find partners and funding[3]

[3] Funding by the OP 'Kansen voor West' was almost approved, but cancelled last minute because the main private investor suddenly backed off – a hugh disappointment. A new investor is sough now, not found yet.

	2. Establish a cooperation, find and hire good 'process technology experts', realize a laboratory and pilot infra-structure. 3 The elaboration of the unit operations on lab and pilot scale, and turn them into a workable whole for the processing of vegetable test streams (sub-project a). 4 Producing sufficient material for test marketing. 5 is like 2 and 3 but then for the processing of cocoa shells (sub-project b). 6 is like 2 and 3 but then through fermentative conversion and reprocessing as an alternative route for cocoa shells (sub-project c). 7 Analysing of starting material and product contaminants. 8 Establishing specifications for raw materials (residual flows) and end products. Since finding funding for building the organic material plant is time consuming, the Quisquiliae initiative also created single focussed smaller projects (sub-projects b,c,d) for individual waste streams in order to maintain speed and direction in this development (public private partnerships and student projects).
Challenge addressed	Every year 140,000 tons of food waste flows are released in the province of Northern Holland, almost all of this is momentarily used for energy production (in other words: it is burnt and the heat is used for the city heating system). Some is used for composting or as animal feed. These are all low-value spending of these residual organic flows. The residual flows of vegetables and cocoa beans contain sufficient nutritional value for further processing and can - at a much higher price - be sold in the food industry. Quisquiliae works out the processes to make this possible. The further development and fine-tuning of process technology leads to specifications at process level. The (further) development of products again as food component / semi-product, may lead to adequate sellable products that can be tested in the market and sold at the highest price/value. The valorisation of residual flows fits within the transition of

	society towards an inclusive and circular economy.
Interregional inspiration	Quisquiliae is mainly inspired by: Mineral valley Twente was presented to the partnership during the Twente partner meeting. Quisquiliae was connected to this initiative afterwards, because the development of innovative solutions to reuse the surplus of nutrients in chemical and manufacturing industry could be interesting to them. The Burgas Laboratories (Buluritst and Organic Salts) showed their interest in Quisquiliae, for this reason they joined the Burgas partner meeting. Because although the substances they work with, and the products are different, they were interested in their laboratories, the way they work, and the work process of the chemical analysis.
Players involved	Green Campus Province of Noord-Holland ABN Bank Municipality of Haarlemmermeer Oterap BV
Timeframe	Sub-project b and c: started in 2019 Sub-project a and d: probably starting in 2020
Costs	Total Investment budget **needed is € 1,150,000** Sub-project b was funded by POP3 250.000€
Funding source(s)	Financiers: - Innovation Fund - Province Northern Holland 300,000 € (convertible loan) - Oterap BV 100,000 € (investment / loan) - POP3 (sub project b)
Urban-rural aspects	This project collects waste streams from both the region (mostly from rural producers) and the city (like cocoa shells from the harbour), to be processed and tested in the pilot plant. This means that contacts have to be established between parties, new linkages and new routes for organic waste streams. Also products will be tested and sold in the MRA, creating new markets and improving rural-urban cooperation in the Amsterdam region.
Innovative character	The innovation of the project consists of:

	1) the construction of the pilot set-up, the plant. 2) the development of processes through which residual flows are converted into end products with higher added value (the processing to food safe and functional end products), 3) product development (ingredients for food that would otherwise be incinerated), and 4) a new partnership (a cooperative organization formed in 2019 to enable effective collaboration with all suppliers and customers in the city and region).
Monitoring	- Kg of organic streams (fruits and vegetables and cocoa shells) used and valorised - Follow and report closely on the progress of proving the concept of fermentative conversion and reprocessing of waste from fruits and vegetables. - Finding funding and building the proof of concept pilot plant

ACTION 3

Name	**Instockmarket.nl:** **Connecting chefs to a B2B Marketplace for surplus & imperfect food**
Planned activities	The aim of the project is to reduce food waste by connecting producers of surplus food with parties who make this food suitable for consumption (restaurants, caterers). There is specific focus on fresh products because the largest waste occurs in these categories, and the potential impact is the greatest. Intended customers are catering entrepreneurs (mainly restaurants and caterers) as well as processors in the western part of the Netherlands. This connection is done via a) an on-line functional B2B marketplace; b) making the supply predictable so that this can be included in both the logistics and the menu planning (analysing big data); c) the organization of a physical distribution system; and d) mobilizing and facilitating (potential) customers (restaurants, chefs) in the maximum use of the supply and, through the sign, creating awareness about food waste for a wide audience.

	The on-line B2B marketplace was established on may 16th: https://instockmarket.nl/ thanks to a subsidy from 'Stichting DOEN' Steps b) to d) are in progress, possibly an application for the OP (Kansen voor West) will be done.
Challenge addressed	Reducing food waste is an important strategy for achieving climate targets and limiting environmental damage. Most food is lost on the side of the consumer and the primary producer. Where the reduction of food waste by the consumer is mainly a matter of behavioural change, the waste on the part of the producer has to do with surplus, or production that does not meet the (beauty) requirements of the market. Surpluses are mainly a result of hedging against risks such as weather conditions and disappointing harvests and disappointing sales. At present, a large part of these surpluses are either destroyed or processed in a low-value way, for example as cattle feed or biogas. In order to make these residual flows available for human consumption, the link between supply and demand is missing. Linking these residual flows to customers appears to be particularly problematic. On the one hand this is a matter of awareness and knowledge: on the demand side it is not clear what, where and when the offer is available. On the supply side it is not clear who the potential customers are and what their needs are. On the other hand, a short supply chain where the products can be delivered to the customer at the desired time, has no competitive costs and guarantees food safety. An important point here is the time aspect: fresh products must be traded and delivered quickly after production. Using big data to make the flows of surplus food predictable is essential to make a good connection to potential customers (like restaurants). Chefs do not want to know last minute what they can serve that evening. To make a menu, they need some time and thus predictability in the supply of goods. Also, to plan logistics in the most sustainable way, predicting amounts and timeframes is essential. On the side of potential customers, due to the efforts of Instock (restaurants serving surplus food) and Dutch Cuisine (a movement of restaurant chefs united in promoting sustainable, healthy menu's) , there is a growing awareness of food waste and the number of restaurants and caterers that are interested in zero-waste cooking and the use of (locally produced) surplus food are growing. They can differentiate themselves from the competition and meet the sustainable conditions that customers are increasingly asking. However, they often lack knowledge regarding procurement of surplus food processing in the menu

	and communicating them positively to customers.
Interregional inspiration	The project is inspired by several partner projects: - Smart farming solutions in Central Macedonia: there was an impressive presentation during the Thessaloniki partner meeting about the use of modern technologies and data, including block chain, used to optimize food production and market predictions. Something similar this projects wants to develop, to predict the flows of 'surplus' food with big data in this B2B project. - Large scale distribution in Lombardy. Because distribution and finding local markets (collect from supermarkets/producers and send to for instance restaurants)are big challenges is this Action. - Spinoff: Macedonian cuisine was brought into contact with Dutch Cuisine, one of the partners in the B2B project, to learn about the use of local food traditions and pride in the use of regional products.
Players involved	**Private sector** Instock : Trigger and owner of the initiative. Brings in own (production) resources, as well as solid expertise and business experience on the subject. Tech company (to be determined) and Tech startup : data analysis and building forecasting model availability residual flows. Logistical partners (to be defined) Role: carrying out pilots for the logistical process Branch organizations of primary producers (ZLTO, LTO Noord) and their members (local farmers and gardeners): In-kind resources: supplying data; work hours to elaborate requirements or on-line platform and business plan Branch organizations catering and food companies : KHN (Koninklijke Horeca Nederland), FSIN (Food Service Institute Netherlands), Contribution: making network and contacts available; in-kind contributions of human hours and communication to their members Providers residual flows ; Hilton Meats , ZLTO members, Seafood Parlevliet, Bakkersland, Cela Vita. Large institutional buyers ; Group, ISS, Albron , OSP catering, Vitam **Social organizations and networks** These partners are crucial for keeping the project socially relevant; embedding in society and stimulating the debate about food waste and ways to combat it Dutch Cuisine: Organisation and movement of restaurant chefs that want to cook in a sustainable way

	Taskforce "Together against food waste" : Consists of companies, civil society organizations and knowledge institutes (primarily by Wageningen Food University, who share the ambition to minimize the waste of food, in the chain and among the consumer.) This initiative fits within the transition agenda of the task force. **Knowledge institutes** · Wageningen University Research (WUR): Knowledge partner; brings in evidence on the supply of food waste throughout the supply chain; · AUAS : elaborating logistic models, partly in-kind contribution hours and student projects (extra awareness among the new generation of logistics professionals about logistics for the circular economy) · AMS institute / Flevocampus: exposure to Floriade 2022, support in communication and publication for knowledge dissemination - Big Data Value Center (https://www.bdvc.nl/) **Public sector** : · CSR Netherlands: knowledge vouchers · Municipality of Amsterdam: CTO involved in the big data aspect , also buyer / promoter regarding tender requirements; partner in screening and where necessary adjusting policy; · Province of North Holland · Province of Flevoland
Timeframe	Three-year project. Start 2020 Start-up phase: Explorations, start of data model half year (until mid 2020) First phase, pilots logistics: 1 year (beginning to end 2020) Elaboration Implementation to break-even: start until the end of 2021 lessons learns and dissemination, assurance concept: start until after 2022
Costs	Total needed € 1,236,439
Funding source(s)	Instock, WUR, Dutch Cuisine, Stichting Doen!, possibly EFRO (not sure yet)
Urban-rural aspects	Surplus food providers from both the city (supermarkets) and the region (local producers and distributors) will be connected to chefs (mostly in the cities). Urban-rural connections will be made

	and will have to become strong and reliable for the plan to work. These connections are in fact quite innovative in a region like the MRA, were producers are generally very export-oriented and where very little local food is eaten in the city.
Innovative character	The project brings together a unique and innovative combination of assets from the private sector, regional civil society organizations and knowledge institutes to reach a societal goal (reducing food waste) in a commercially viable way. One highly innovative aspect of the project is the application of big data in order to make the food surplus flows predictable. This new data and knowledge generation that will be started locally (MRA) can become relevant across the EU and beyond. Secondly, the project sets out to create logistics innovations tailored to surplus flows. The innovative business plan seeks to transform the way that our food is valued, repurposed and distributed, thus stimulating the debate about the way for other circular economy business models.
Monitoring	All steps described will be monitored: - kg of food waste prevented (collected, saved) - number of visitors and food-transfers done through the B2B marketplace; - number of chefs/restaurants making use of the platform; - check: realization of an physical distribution system; - counting the maximum use of the supply (of how much is still wasted because it remains unused);

ACTION 4

Name	**Development, marketing and production of Lisdodde** (Lisdodde (Cattail) is a plant/crop growing in wetlands)
Planned activities	In addition to experiments with Lisdodde, where cultivation and environmental effects are being investigated, we want to set up and complete a processing and marketing chain. The three crucial steps in this are: upscaling of production; industrial processing into insulation board in the region and sales in the region. This includes a cooperation concept between government, knowledge institutes and industry. The application must have as much impact as possible on climate objectives.

	Activities: - apply for funding, a preliminary application for EFRO 'Kansen voor West' is in progress, but other funding is also looked at - find New locations to grow the crop on location, to create in collaboration with one or more cattail growers - find additional re-processors, in order to make an insulation board that meets the requirements of hot building (circular building). - Do additional testing. Promising slabs are examined by Technical University Delft on properties and certified patents may arise in this process. - Find launching customers. Likely candidate is a housing project by the City of Amsterdam that focusses on circular building: Cattail fits the pilot insulation technique for Warm Building. This is in collaboration with KBNG architects, patent holder. KBNG imposes production requirements on the site and indicates the maximum acceptable costs. The project scaled production of Cattail, is urban-rural, is very innovative and will result in large CO2 reduction – one of the three main objectives formulated in 'Kansen voor West'. Also, it is innovative and regional – a clear link between the production around the city, and use in housing IN the city.
Challenge addressed	The wetlands/peatlands surrounding Amsterdam suffer from soil inclination and loss of biodiversity due to large scale agriculture. There is a need for small nature-inclusive cultivation. Present land use is dairy farming. Claims of the sector to become more sustainable and nature inclusive exist for years with limited success. Small scale experiments with "wet crops" are executed, one of them is Lisdodde (Cattail). It has the potential to stop CO_2 emissions and even better: to capture CO_2. Peat areas in the Netherlands emit approximately 4 Mton CO_2 per year. In principle/theory they can capture about one Mton. Cattail is in the short term the most promising crop to keep the soil productive and achieve CO_2 goals. There are already projects to experiment the cultivation of Lisdodde . It is a crop that is very suitable to be used as insulation plate. But it is also very protein-rich and suited for (human) consumption. The biggest challenge regarding the financing of the project , is in the fact that there is not yet a market price for this product.
Interregional inspiration	The stakeholder responsible for this Action joined the meeting in Thessaloniki, and was very much inspired by the visit to Koukakis farm. Specifically: the fact that they controlled the whole chain, it was like a vertical column for one product: from owning the area of land, the cattle, to producing the food the cows eat, to the distribution, the processing, marketing, the dairy products they

	sold. This is exactly what they want to establish in this Lisdodde project – to develop a chain from beginning to the end (and beyond – this product is completely biodegradable, thus closing the loop). Also, inspiration was found in the Controlled DNA project of Lombardy : to form a cooperation of regional producers, to patent and certificate a local crop/product and make it marketable. This is an ambition for Lisdodde.
Players involved	- Lisdodde farmers - Waterschappen HHNK,(regional water board) - AMS institute /WUR (Wageningen University), - Municipality of Amsterdam - Province of North Holland - Enterprises in Warm Building (used in construction) - Plate makers, insulation board makers (sme's).
Timeframe	2020 – 2024
Costs	Total cost over 4 years are estimated at around 1 million € (includes Project leader, Harvesting machine contribution, Monitoring greenhouse gasses national government , Construction Lisdodde community. Research on the best treatment for hot building with several processors, Certification and product description .) The hot-building pilot is not included in the application. Market potential: - There is no bio-based, circular and compostable insulation board yet, there is potentially a European market of 100,000 euros. - The revenue model is the working towards a commercial product for commercial and private construction applications. There will possibly be patent. - Financial perspective on term . After 5 years, we expect to have a (or diverse) modest production line of about 1000 tons of construction plate, which is cost-neutral. Harvest, transport and processing are recouped from the sales price.
Funding source(s)	Amsterdam municipality provides the basis for the crop growing location (lease value 20,000 / y * 5 = 100.000); Furnishing and piloting costs of 500,000 paid by Province NH 50% and the state of the Netherlands (50%) for 5 years; Harvest and transport costs are cost neutral This Action is still in the process of a preliminary application for funding by 'Kansen voor West'. However, it may not be in this period, since the process of getting

	all partners and players involved defined, to define actions, everybody's role etc. , is very time consuming and the EFRO budget of this period is almost gone. However, the process of finding (maybe different) funding proceeds and the project will continue.
Urban-rural aspects	The Lisdodde fields (crop testing sites) are in rural area's surrounding Amsterdam. There is knowledge exchange between farmers, knowledge institutes and the government. Municipality housing projects in Amsterdam can become the launching customer.
Innovative character	Lisdodde as a crop would be very innovative in this area, and the product is an innovative and sustainable alternative to current insulation materials. Lisdodde grows wet and is a native crop that contributes to biodiversity. No chemical control needs to be applied so it becomes compostable. The product is very promising: it is mould-resistant, fire-resistant, has long fibres that hold air, as result of which it insulates. The processing leads to a vapour-open structure.
Monitoring	There will be regular check ups on the scheduled actions , and since the municipality is involved in the project, monitoring is a must. The end goal (the use of Lisdodde isolation material in Amsterdam houses) is a clear and controllable goal. As soon as the production chains starts we can monitor: - Kg of harvested Lisdodde - Kg Lisdodde used to make insulation board - Number of tested techniques /processors for insulation board from Lisdodde - Amount of insulation board that is sold to the market

ACTION 5

Name	**Food cooperative MRA** Connecting city (markets) and region (producers) by building a short, transparent supply chain for local food
Planned activities	To build a cooperative of producers and buyers of local food to ensure together a vital, sustainable, circular and social food

	landscape in the Metropolitan Region Amsterdam. The first activity will be facilitating a cooperative of producers / farmers who want to participate in this transition, and at the same time find steady reliable markets for sales in the city. Connections are already made with hospitals, hotels, alternative sustainable street markets and a local semi-municipality local products brand called 'Amsterdam Made' (also a Rumore stakeholder). A process will be facilitated, to organize the necessary logistics and ensure proper coordination of supply and demand. Thanks to this short chain, a good, stable price and predictable sales for farmers in the hinterland of Amsterdam can be given so that they can produce vital food for buyers in Amsterdam in a sustainable, nature-inclusive way. Secondly, next to this main process, activities will focus on building missing facilities to enrich and strengthen the cooperation between both parties. What will be needed are essential resources such as a vegetable cutting plant, a production kitchen, the necessary warehousing and order picking of regional products. These enriching resources will ensure that ultimately more buyers and producers from the region can join the cooperative. In addition, it is desirable to establish a hub /foodcenter in Amsterdam that is connected to, among other things, the Noord-Hollands canal, so that in the future the food can be transported to Amsterdam via sustainable inland shipping and then delivered via fine-meshed sustainable logistics in the city. A third activity is offering producers and buyers the desired guidance to provide them with the necessary knowledge for producing, processing and consuming regenerative food . *Strategy* The start of this project will be bundling a few short chain initiatives and professionalizing them in a Cooperative Center for Regional Food (CCRV). This Centre will continuously expand with new members. In addition, members together with several initiatives, will join forces to set up a joint knowledge center to safeguard and disseminate the knowledge and experience to be developed. This will be linked to education multilevel and multidisciplinary institutes to pass on the created value. The cooperation will work on several projects (short supply chains, knowledge, education) and keep an overview of all these projects, so that everyone can follow and commit to them. Also, additionally, the projects will be ranked under the 17 Sustainable Development Goals (SDGs).

	Concretely, to find a market in the City, the local brand 'Amsterdam Made', hospitals and hotels will be the first focus/clients. In short: 1) we facilitate the cooperation and the sales process between regional producers and buyers 2) we enrich the chain with missing facilities and 3) We guide members towards regenerative cycle agriculture and healthy kitchens. What is needed for this: - Daily logistics (collected from farmer and delivered to customer) - Cross docking - Order picking - HACCP and hygiene assurance - Quality control - Purchase based on order - Online sales platform/website - Administration - Marketing and acquisition - Facilitate demand-driven production - Impact monitoring
Challenge addressed	There is a general awareness that the current food system from soil to mouth is no longer tenable if ecological and social values are passed on in addition to economic values. The many import and export movements due to too large-scale mass production of monocultures create a huge CO2 impact in the Netherlands. Soil degradation, soil inclination and loss of biodiversity due to the current land use (large scale dairy agriculture) are serious problems . Among customers there is a growing desire for transparency: insight into the food chain and the health value of food. Many of the current health problems are food related and due to the consumption of ultra processed food with low health value. Because primary producers (farmers / horticulturists, etc.) are not the owners of the processing companies, in order to shift the power in the chain, a cooperation is desirable. Short chain initiatives are often too small-scale and fragmented; logistics, IT, hygiene organization and knowledge development costs are too high in relation to turnover. Also, the educational material for young people to be trained is too much derived from the unsustainable current system.
Interregional inspiration	Several partner-projects involve forming cooperatives, farmers standing strong together, in some cases they even have a long

	tradition in this, one that we have lost in The Netherlands. Also partners involved in creating entrepreneurial platforms or clusters or hubs that create connections between production chain players, to better market regional products (like Smart Farming solutions and the American Farm School in Central-Macedonia, the Innovation incubator and start-up centres of Luneburg, Open-Agri in Lombardy or the Agrodesign cluster in Thessaloniki). Also, this is mentioned before, Agri-Food in the Netherlands needs valuing taste and pride in local, regional products. Smart farming solutions in Central Macedonia: there was an impressive presentation during the Thessaloniki partner meeting about the use of modern technologies and data, including block chain, used to optimize food production and harvest and market predictions. Large scale distribution in Lombardy. Lastly, the non-profit organisation "Agronutritional Cooperation of the Region of Central Macedonia" was inspiring due to their form of organization, multi-tasking (advisory board, network for the promotion of local food products, facilitate local farmers, initiating joint actions) .
Players involved	- Farmers and local producers - Intermediar (between farmers and other parties) - Regional partners like the provinces of North Holland and Flevoland, MRA bureau (?) - City of Amsterdam - Markets: hospitals, hotels, Amsterdam Made, street markets and more - Food distributors - Food processors
Timeframe	2020-2023
Costs	Pm – this project is still in an early stage and will start small and then grow (more producers and markets will join).
Funding source(s)	Several options are looked at. There are promising connections to Rabo bank, and also there is the plan to make a 'Regio deal' with several partners from the MRA (Regio deals are funded by the national government).
Urban-rural aspects	Most producers are surrounding the city, markets are in the city, the more that will join (from the whole MRA+) the better to create enough mass. We focus on MRA+ because in fact, the whole of the province Noord Holland will be needed, since fruits

	and vegetables are mostly grown just north of the MRA (the MRA itself has mostly dairy farmers).
Innovative character	Social innovation and activation, a cooperative like this does not exist yet. It could become a game changer for the region.
Monitoring	This Action came up rather late , and is a direct result of the inter-regional learning (and in the process can continue to learn). Monitoring can consist of: - Number of producers involved in the cooperative - Number of markets involved in the cooperative - Amount of local food sold to the markets in the city

5 - Policy recommendations

Although influencing the current Policy Instrument Kansen voor West directly is hardly possible (see 2.1 The Operational Programme and its priorities), recommendations to give 'Circular economy' a strong base in the next programming period were done towards the managing authority and the lead partner.

A circular economy is a viable alternative to the unsustainable linear (take-make-waste) system that has resulted in global warming, sea level rising, oceans full of plastic soup, massive loss of biodiversity. Entrepreneurs who very consciously try to do business in a sustainable, regenerative way, need support to compete and find their way into the current system, in order to change it.

When it comes to future improvement of the next Operational Programme (2021-2027), the major potential of the funding instrument with regard to the local rural-urban themes lies in 'circular economy' becoming a new topic for funding, and it should therefore be explicitly named as a new theme and focus for Amsterdam and the MRA. Furthermore, more capacity for project development during the programme period would help generating more high-quality projects.

In fact, preparations for the next ERDF-period 2021-2027 have commenced, focusing on the new Smart Specialisation Strategy (RIS3) for innovation and the new Operational Programme. The new Programme will continue cooperation between four regions and four cities. There is great potential under this funding instrument to include 'Circular economy' as one of the 5 new objectives of the Cohesion Policy 2021-2027 for the whole of the Western part of The Netherlands.